REMARKS (Need revisions)

Claims 1-48 from the parent application have been cancelled and claims 49-79 have been added as set forth above. Claims 49-79 are identical to finally rejected claims 1-31 from the Office Action in the parent application dated April 25, 2003. The outstanding rejections to claims 1-31 include the following:

(a) Claims 1-11 and 22-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568;

(b) Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland, et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118;

(c) Claims 1-11 and 22-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568; and

(d) Claims 1-31 are rejected 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118.

The undersigned representative respectfully traverses these rejections and responds to each rejection in turn as follows.

(a) Rejection of claims 1-11 and 22-31 (now claims 49-59 and 70-79) under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland et al. WO 98/04650 further in view of Margerum et al. '568

Independent claims 49 and 70 include the following limitations:

49. (NEW) A system for duplicating a hologram comprising:
a radiation source for emitting a coherent beam of radiation;
a hologram having an electrically controllable variable diffraction efficiency; and

a recording substrate comprised of a polymer-dispersed liquid crystal material for recording a replica of the hologram having an electrically controllable variable diffraction efficiency therein, wherein the hologram and the recording substrate are in optical contact with one another and are placed in a path of the coherent beam of radiation.

70. (NEW) A method for duplicating a hologram comprising:

directing a coherent radiation beam at a first optical component having a hologram with an electrically controllable variable diffraction efficiency recorded therein;

diffracting a first portion of the coherent radiation beam via the hologram forming a diffracted radiation beam;

transmitting a second portion of the coherent radiation beam through the first optical component forming a transmitted beam; and

interfering the diffracted radiation beam with the transmitted radiation beam within a second optical component to form a replica of the hologram having an electrically controllable variable diffraction efficiency therein.

°

By virtue of the amendment to claims 49 and 70, the variable diffraction efficiency of the hologram and the replica of the hologram are electrically controllable. In the rejection, the Office has cited references that teach or suggest the following:

A. Chang describes the formation of a **static** hologram that has different **static** diffraction efficiencies along the length of the hologram. Chang DOES NOT TEACH OR SUGGEST forming this **static** hologram utilizing a first hologram, i.e., master hologram, to form a second hologram, i.e., replica hologram.

B. Ikeda describes the replication of a **static** hologram using a master **static** hologram. Ikeda DOES NOT TEACH OR SUGGEST replication of an electrically switchable hologram with variable diffraction efficiencies. Further, the **static** holograms in Ikeda do not have different diffraction efficiencies within a single hologram.

C. Sutherland-WO describes polymerizable materials for use in forming electrically switchable holograms (hereafter "ESH") having variable diffraction efficiencies. Sutherland-WO DOES NOT TEACH OR SUGGEST, *inter alia*, forming the ESH utilizing a first ESH, i.e., master ESH, to form a second ESH, i.e., replica ESH.

D. Margerum '568 describes polymerizable materials for use in forming electrically switchable holograms (hereafter "ESH") having variable diffraction efficiencies. Margerum '568 DOES NOT TEACH OR SUGGEST, *inter alia*, forming the ESH utilizing a first ESH, i.e., master ESH, to form a second ESH, i.e., replica ESH.

Independent claims 49 and 70 included limitations to the replicating of a master ESH into a replica ESH by exposing the master ESH to a single beam that becomes two beams, transmitted and diffracted, by virtue of the holographic diffraction grating within the master ESH. The transmitted and diffracted beams interfere within the replica component to form a replica ESH.

From the stated review of the cited references, there is no reference that teaches or suggests utilizing an ESH master to split a single beam in order to replicate the ESH interference pattern within the ESH master through contact copying in a replica component, wherein the replica formed in the replica component contains the ESH interference pattern of the master. Indeed, there is no cited reference that teaches using an ESH as a master to form any type of hologram, static or otherwise, through contact copying. Consequently, the undersigned submits that the Office has failed to meet the threshold requirements for establishing a *prima facie* case of unpatentability. Specifically, according to well-established precedent, the examiner bears the initial

burden of factually supporting any prima facie conclusion of obviousness. Further, in order to establish a prima facie case of obviousness, three basic criteria must be met:

(1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;

(2) there must be a reasonable expectation of success; and

(3) the prior art reference (or references when combined) must teach or suggest all the claim limitations.

In this case, the Office has failed to meet requirement (3).

Even assuming, *arguendo*, that requirement (3) has been met, requirement (1) has not. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). In the Office Action, the Office correctly identifies that there are references (Sutherland-WO and Margerum '568) wherein a single ESH is formed using a two beam optical set-up. These references do not suggest using that single ESH to then form a second replica ESH using a single beam, according to the limitations of claims 49 and 70. The Office also correctly identifies a reference (Ikeda) that uses a static master in a single beam configuration to form a replica of the static master. Finally, the Office correctly identifies a reference (Chang) teaching a static hologram that has different diffraction efficiencies along its length, although the static hologram is not formed using a master/replica configuration and the resulting hologram is not electrically switchable between different diffraction efficiencies.

The Office asserts that one skilled in the art would have found it obvious to:

1) form the static hologram having different diffraction efficiencies along its length of Chang using a master hologram and second the single beam copying method of Ikeda;

2) replace the static hologram of Chang with the electrically controllable variable diffraction efficiency PDLC hologram of Sutherland-WO in order to vary the diffraction efficiency during replication to get the various static diffraction efficiencies within the Chang static hologram; and

3) replace the holographic recording medium of Ikeda or Chang in order to make the Chang replication switchable between diffraction efficiencies along it length.

And the Office asserts that all of this would have been obvious to one of ordinary skill without the benefit of the applicant's disclosure? With all due respect, the undersigned submits that the Office is using impermissible hindsight in rejecting the claims.

Referring to controlling Federal Circuit case law,

> It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps. Interconnect Planning, 774 F.2d at 1143, 227 USPQ at 551. The references themselves must provide some teaching whereby the applicant's combination would have been obvious.

In re Gorman, 933 F.2d 982, 18 U.S.P.Q.2d 1885 (Fed. Cir. 1991).

> The genius of invention is often a combination of known elements which in hindsight seems preordained. To prevent hindsight invalidation of patent claims, the law requires some "teaching, suggestion or reason" to combine cited references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed.Cir. 1997).

McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 60 U.S.P.Q.2d 1001 (Fed. Cir. 2001).

"Determination of obviousness cannot be based on the hindsight combination of

components selectively culled from the prior art to fit the parameters of the patented invention." ATD Corp. v. Lydall, Inc., 159 F.3d 534, 546, 48 USPQ2d 1321, 1329 (Fed.Cir.1998). In this case, the undersigned respectively submits that the Office has done precisely what the Federal Circuit has warned against --- using the applicant's invention as a "blue print," the Office searched for references having the individual pieces and argued that the combination of the pieces would be obvious. The undersigned fails to see where there is any teaching or suggestion in any of the cited references to combined the cited references and form the claimed invention. The Office has provided the various known elements, but has failed to provide the proper motivation to combine these elements.

Referring specifically to the rejection, the Office states with regard to 1) that it would be obvious to modify the process for forming the holograms recited in Chang by using the contact copying method of Ikeda to "obviate the need to [sp?] a two beam exposure apparatus... ." Ikeda uses contact copying to copy a static master hologram with a single diffraction efficiency to form a copy hologram with a single diffraction efficiency. There is no teaching or suggestion in either Ikeda or Chang for using the process in Ikeda to copy a multiple diffraction efficiency static master.

With respect to argument 2), the Office states, "[It would have been obvious] to use the PDLC holograms of Sutherland WO as the master transmission hologram to obviate the need for diffusers of [sp?] the like by coordinating the location of the laser beam used in the scanning copy process of Ikeda with the diffraction efficiency desired in that portion of the holographic copy." There is absolutely no suggestion found in any of the cited references to make this technology leap? Further, this argument does not even

describe the claimed invention. **[Dick, would this even work given the teachings of the references? If not, please add technical argument here.]**

Finally, with respect to 3), the Office states, "and by further replacing the holographic recording material to produce a switchable hologram with faded edges so that it could be turn off when it was not desired to be in the drivers view and processing without the need for wet development." Again, the undersigned fails to see where there is suggestion or motivation to make this leap found in the references cited --- and not gleaned from the applicant's disclosure?

Accordingly, the undersigned respectfully submits that claims 49-59 and 70-79 are allowable over the combination of references since the Office has failed to establish a *prima facie* case of unpatentability.

(b) Claims 1-31 (now claims 49-79) are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland, et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118

The undersigned incorporates the arguments set forth above in section (a). The additional references cited in this rejection are Eguchi et al. JP 03-188479 and Wreede et al. Neither Eguchi et al. JP 03-188479 nor Wreede et al. cure the limitation or motivation deficiencies of the other four (4) references as described in section (a). Specifically, both Eguchi et al. and Wreede et al. are cited for teaching contact copying of a reflection hologram where the incident beam passes through the recording medium and is diffracted to form a second beam by the underlying reflection medium, wherein the incident beam and the second beam interfere in the recording medium to duplicate the reflection hologram. Neither Eguchi et al. or Wreede et al. teach or suggest such a recording

scenario wherein the reflection hologram has a variable diffraction efficiency. Consequently, there can be no teaching of the formation of a replica reflection hologram having a variable diffraction efficiency using single beam contact copying with a variable diffraction efficiency master. The combination of Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland, et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118 clearly does not teach or suggest a system or method which includes a hologram(s) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims.

(c) Claims 1-11, 22-31 (now 49-59 and 70-79)are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. '218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568

The undersigned incorporates the arguments set forth above in section (a). The additional references cited in this rejection are Sturdevant '946, Redfield '861 and Margerum et al. '218. None of Sturdevant '946, Redfield '861 or Margerum et al. '218 cure the limitation or motivation deficiencies of the other two (2) references as described in section (a). Sturdevant is cited by the Examiner as teaching

> "a continuous process where the holographic recording medium is preexposed without any pattern using UV light (21), Then the hologram is exposed using a laser and contact exposure through a holographic master (85) and then post exposed using a UV lamp (91)."

The Examiner cites Redfield as teaching a precure for depleting oxygen and reducing the induction period; carrying out the fixation exposure using a reference beam; and the use of spatial light modulators. And Margerum et al. '218 is cited for teaching "the use of a precure to overcome the induction period in photopolymerizable materials." These

references were cited for their alleged teachings of limitations that are no longer recited n the pending claims. As such, the teachings do not cure the deficiencies of the previously cited references with respect to the pending claims. The combination of Sutherland, Margerum '568, Sturdevant '946, Redfield '861 and Margerum et al. '218 clearly does not teach or suggest a system or method which include a hologram(s) (reflection or otherwise) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims.

(d) Claims 1-31 (now 49-79) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdevant '946, in view of Redfield '861, Margerum et al. 218 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118

Incorporating herein the arguments set forth in sections (a)-(c) above, neither Sturdevant, Redfield, Sutherland, Margerum '218, Margerum '568, Eguchi et al. JP 03-188479, Wreede et al. '118 or any combination thereof, teach or suggest a system or method which includes a hologram(s) used as a master hologram(s) for contact printing a replica(s) thereof, wherein the replica(s) and hologram(s) has an electrically controllable variable diffraction efficiency as set forth in independent claims.

CONCLUSION

In view of the remarks stated above, the undersigned representative respectfully requests that the rejections of claims 49-79 be withdrawn. A notice of allowance to this effect is earnestly solicited. Should the Office require further information and/or feel that contacting the undersigned will expedite prosecution, the Office is invited to do so at the number provided below.

Respectfully submitted,

Date: 3/10/04

By: Dawn-Marie Bey

Dawn-Marie Bey
Registration No. 44,442
KILPATRICK STOCKTON LLP
Suite 900
607 14th Street, N.W.
Washington, D.C. 20005
(202) 508-5800